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ABSTRACT

A study using the 1980 High School and Beyond senior cohort was undertaken to assess the relative impact of socioeconomic status (SES), parental attention, mother's working patterns, and family structure on student achievement. More specifically, this report describes the relationship between educational attainment and the components of the SES index as used in the National Longitudinal Surveys conducted by the National Center for Educational Statistics. Findings demonstrate the pervasive importance of parental education and family affluence. These factors were key to students' postsecondary attainment, even when aspects of home environment were taken into account. Home environment factors were less important overall, and many were found to have no independent influence on educational attainment. Only parental involvement during high school was of significant impact when social background factors were controlled, although students living without either parent had significantly lower attainment compared to others with otherwise similar backgrounds. These preliminary results do indicate that there may be interaction effects between parental involvement and social background as well. (TJH)

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SOCIOECONOMIC STATUS, FAMILY STRUCTURE, AND PARENTAL INVOLVEMENT: THE CORRELATES OF ACHIEVEMENT

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SOCIOECONOMIC STATUS AND HOME ENVIRONMENT: THE CORRELATES OF STUDENT ACHIEVEMENT

Introduction

There is a longstanding debate among social scientists about the importance of class in determining the kinds of school experiences that are offered to students. There is substantial evidence that student attainment is associated with students socio-economic status as measured by indicators of affluence, parental education, and occupational status. Previous studies of educational attainment have demonstrated that student socioeconomic status is associated with secondary school achievement and experiences in postsecondary education.[1] During recent studies of high school seniors participating in the longitudinal studies surveys of the National Center for Education Statistics, the relationship between socioeconomic status and educational attainment has been confirmed again, in a variety of student cohorts and at various stages in the educational process.[2] Figure 1 illustrates that relationship among the 1980 high school seniors.[3]

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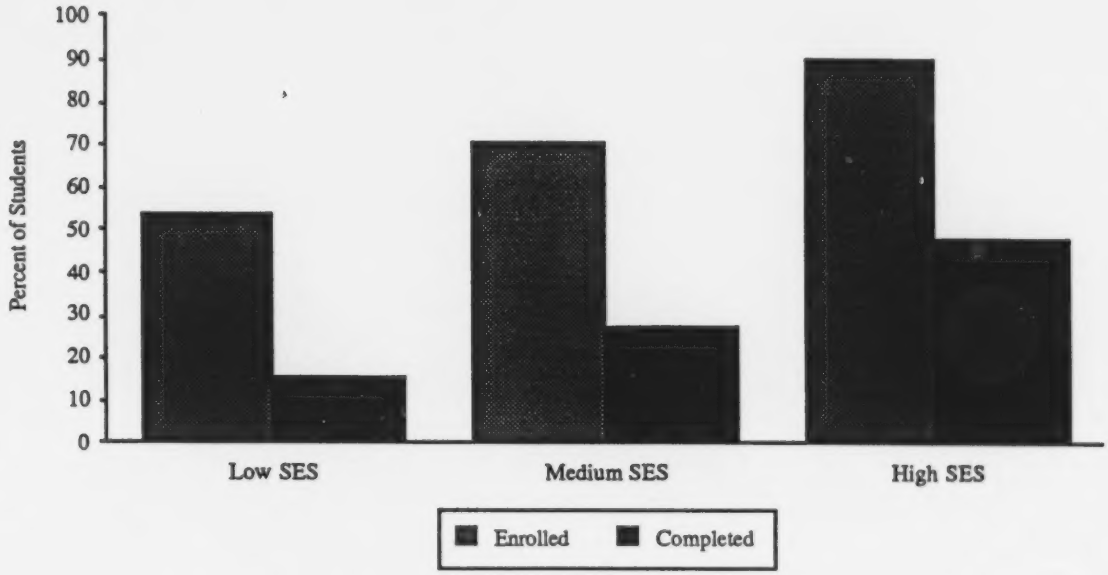
[1] See especially William H. Sewell and Robert M. Hauser, "Causes and Consequences of Higher Education: Models of the Status Attainment Process," in Sewell, Hauser, and Featherman, ed., *Schooling and Achievement in American Society* (N.Y.: Academic Press, 1976), pp.9-27.

[2] See Eagle et al, *A Descriptive Summary of 1980 High School Sophomores: Six Years Later; A Descriptive Summary of 1980 High School Seniors: Six Years Later; and A Descriptive Summary of 1972 High School Seniors: Fourteen Years Later.* All published by the Department of Education's Office of Education Research and Improvement, 1988.

[3] Students were divided into four categories by their percentile ranking on a composite measure of socioeconomic status. More information on that composite measure is provided in the next section of this report. In Figure 1, those with low SES are those in the bottom quartile, while those with high SES are those in the top quartile. Those with medium SES are between twenty-fifth and the seventy-fifth percentile. The percentages shown in this figure, as with all data on enrollment and attainment presented in this report, represent rates of enrollment and attainment by February 1986.

Figure 1
Percent of 1980 High School Seniors Enrolling and Completing in Postsecondary Education by 1986, by Socioeconomic Status



Although socioeconomic status was associated with postsecondary enrollment and attainment for the 1980 high school seniors, the nature of that relationship is not clear from the results shown in Figure 1. Since the SES index is a composite of five different variables, the first question to be answered is whether one or more aspects of socioeconomic status are associated with education while others are not.

In addition, the effect of an individual student's socioeconomic status (SES) on that student's attainment is difficult to separate from the effect of other factors. Some education officials claim that differences in attainment are largely due to aspects of the home environment, especially the nature and amount of student-parent interaction. These officials often cite data showing that students with working mothers and students from single-parent families do more poorly in school, presumably due to the lesser amount of attention and supervision they receive at home. Others claim that if these students have lower achievement than others, it may well be due to economic factors rather than family characteristics. It is possible that a higher proportion of the high SES seniors enrolled and completed in postsecondary education mainly because the better-educated parents in the high SES category spent more time with their children in learning-related activities than did other parents. If any of these hypotheses is true, the demonstrated relationship between socioeconomic status and educational experiences would in fact be the result of a relationship between learning activities and educational experiences.

The objective of this research was to assess the relative impact of socioeconomic status, parental attention, mother's working patterns, and family structure on student achievement, as well as the interrelationship of these two factors. The analysis was conducted on the 1980 high school senior cohort interviewed for the High School and Beyond surveys as part of the National Longitudinal Surveys conducted by the National Center for Education Statistics.[4] This report describes the relationship between education attainment and the components of the SES index as used in the National Longitudinal Surveys. It also describes the relationship between student achievement and some alternative measures of student background that concern the home environment. The third section explores the multivariate relationship among aspects of socioeconomic status, home environment, and educational attainment

Indicators of Socioeconomic Status

The measure for socioeconomic status developed for the National Longitudinal Studies is a composite of five different variables. The variables used are mother's education, father's education, family income, father's occupational status, and the number of certain types of possessions found in the student's home.[5] These variables were standardized and given equal weight in constructing the index for socioeconomic status.[6] Table 1 shows the relationship between these five characteristics and educational experiences for 1980 high school seniors: students' educational attainment was strongly associated with all five indicators used in the SES composite.[7]

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[4] For more about the data used, see the technical appendix to this report.

[5] Occupational status is expressed as the average Duncan SEI score for the occupations included in the response category chosen by the student in Question BB030 in the base-year survey. The items included in the possessions variable are those named in Questions BB104A through BB104I in the base-year survey, including a typewriter, electric dishwasher, encyclopedia, two cars, and five other items.

[6] If more than three of these variables were missing, the case was treated as missing data. If fewer than three were missing, then a value is substituted for the missing variable equal to the mean for the appropriate subgroup of students. The construction of this index for all of the longitudinal studies is best described in National Longitudinal Study: Base Year (1972) through Fourth Follow-Up (1979) Data File User's Manual, Volume II, Appendix K.

[7] The categories shown in Table 1 are simplifications of the codes originally assigned to these variables and used to construct the SES index. "Low" household possessions refers to students in the bottom quartile for the number of the possessions reported, while "high" refers to student in the top quartile. Occupational status was considered high if the Duncan SEI score was above 65 (professional and managerial occupations) and low if it was below 16 (service, operative, and laborer occupations). All others were considered medium status occupations.

Table 1
Relationship between SES Indicators and Educational Attainment for 1980 High School Seniors†

	Mother's Education:				Father's Education:			
	Lt HS	HS Only	Some PSE	BA or Higher	Lt HS	HS Only	Some PSE	BA or Higher
Level of Education:[8]								
HS Diploma	49%	35%	20%	10%	48%	34%	25%	10%
Some PSE	42	51	59	51	43	52	57	52
BA/BS	7	14	21	39	8	13	18	38

	Household Possessions:			Father's Occupational Status:		
	Low	Medium	High	Low	Medium	High
Level of Education:						
HS Diploma	45%	34%	24%	43%	32%	18%
Some PSE	48	51	53	47	51	52
BA/BS	6	14	23	9	17	30

	Family Income:				
	<$7K	$7K-20K	$20-25K	$25-$38K	>$38K
Level of Education:					
HS Diploma	45%	39%	29%	23%	17%
Some PSE	47	51	51	55	48
BA/BS	8	10	19	22	33

† Percentages do not sum to 100 due to rounding and the exclusion of those with no high school diploma.

[8] Those few students who dropped out after the 1980 interview and never earned a high school diploma are not shown in the tables for this report, since they constituted less than one percent of the senior class. "HS Diploma" includes those students who had received a diploma or the equivalent by 1986. "Some PSE" means the student had some postsecondary education but no four-year degree. "BA/BS" includes all students who received four-year degrees, including those who received advanced degrees.

Home Environment and Student Achievement

Five other student background variables were examined in detail for this report: composition of the household, parental involvement with the student during high school, parents' reading to the student during early childhood, patterns of mother's employment, and having a special place in the household for the student to study,[9] Table 2 shows the proportion of students at each level of attainment for selected categories of these variables.

[9] Parental involvement was measured by the student's score on an index composed of the following variables: frequency of talking with parents, parental involvement in planning for post-high school activities, and parents' monitoring of school work. Students were divided into high, medium, and low categories based on their ranking among the entire 1980 senior cohort. High scorers were those in top quartile, medium scorers were those between the twenty-fifth and seventy-fifth percentile, and low scorers were those in the bottom quartile.

with Table 2
Percentage of 1980 High School Seniors with Different Types of Home Environments, by Educational Attainment

	Parents Highly Involved during HS	Parents: Medium Involvement during HS	Parents Not Very Involved during HS	Special Place to Study during HS	No Special Place to Study during HS	Read to Daily during Childhood	Read to Rarely during Childhood
Level of Education:[10]							
HS Diploma	20%	32%	43%	28%	33%	23%	36%
Some PSE	53	51	48	50	52	55	49
BA/BS	27	17	8	21	15	21	14

	Mother Never Worked	Mother Always Worked FT	Household: Original Parents	Household: No Parents	Household: Parent & Guardian	Household:[11] Mother Only
Level of Education						
HS Diploma	29%	32%	30%	50%	35%	33%
Some PSE	52	51	72	5	7	14
BA/BS	18	16	19	5	12	13

As Table 2 shows, some home environment characteristics were associated with postsecondary attainment for the 1980 high school seniors. For example, 19% of students living with their original parents had received four-year degrees, compared to 5% of students living with neither parent. Students living with one parent only, with or without a guardian, were somewhat less likely than students living with their original parents to have attained such degrees. However, the relationship between mother's work patterns and student attainment was not clear from this study of 1980 high school seniors. There was no significant difference

[10] Those few students who dropped out between the 1980 interview and never earned a high school diploma are not shown in the tables for this report, since they constituted less than one percent of the senior class. "HS Diploma" includes those students who had received a diploma or the equivalent by 1986. "Some PSE" means having had some postsecondary education but no four-year degree.

[11] Data for father-only households not shown, since less than 3% of students lived in such households and the educational attainment of these students was not significantly different from that of students in mother-only households. Mother-only households accounted for 13% of the students, parent-and-guardian households for 7%, no-parent households for 6%. Thus students living with their original parents were 72% of the population of 1980 high school seniors.

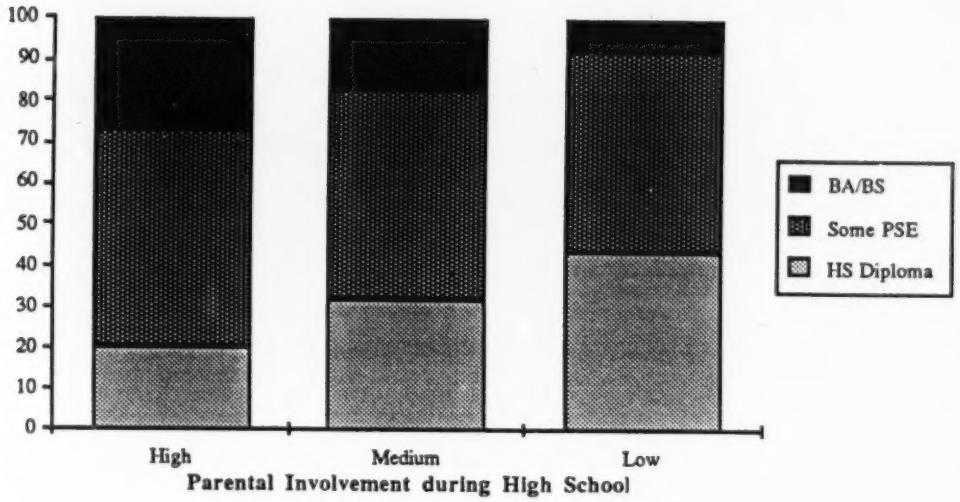
between the educational attainment of those students whose mothers had worked full-time throughout their childhood and those whose mothers had never worked.[12]

Parental involvement in students' education was especially related to educational attainment. Students whose parents read to them frequently during childhood had higher levels of attainment by 1986: 21% among those with daily reading experiences compared to 14% among those with rare reading experiences.[13] Similarly, students who reported having a special place to study during high school were more likely to have enrolled in postsecondary education and to have completed four-year degrees. Most consistently related to educational attainment was parental involvement during high school. Figure 2 compares the educational attainment of students who experienced various levels of parental involvement during high school. Fully 80% of those whose parents were highly involved had enrolled in some form of postsecondary education by 1986, and 27% had received four-year degrees. In contrast, 57% of those with low involvement parents had enrolled and only eight percent had received degrees.

[12] Not shown in Table 1 were the attainment rates for students whose mothers worked part-time only or full-time only after the student was enrolled in school. There was no significant difference between the attainment rates of students with these maternal work patterns.

[13] Data are not shown in Table 1 for students who said they were read to "frequently," but the educational attainment of these students was not significantly different from that of students who said they were read to "daily." Included with students who said they were read to rarely were those students who stated they could not remember whether they were read to during childhood or were never read to at all. There was no significant difference in the educational attainment of these three groups.

Figure 2
Percent of 1980 High School Seniors with Different Levels of Parental Involvement and Childhood Reading, by Highest Level of Educational Attainment in 1986



Interrelationships Among Home Environment, Household Composition, Socioeconomic Status, and Educational Attainment

Among the 1980 high school seniors, advantageous home environments were more common in higher SES households. Figure 3 compares the mean scores for students of different socioeconomic status on an index for the home environment composed of students' scores for parental involvement, childhood reading, and having a place to study.[14] The higher the home environment score, the more advantageous the home environment in terms of parental concern with students' learning before and during high school. The mean HES was .62 for students in the top SES quartile, .52 for students in the third, .48 for those in the second, and .42 for those in the bottom quartile. Since students with higher socioeconomic status had higher educational attainment, the relationship already demonstrated between home environment and educational attainment may actually be due to SES effects on both of these.

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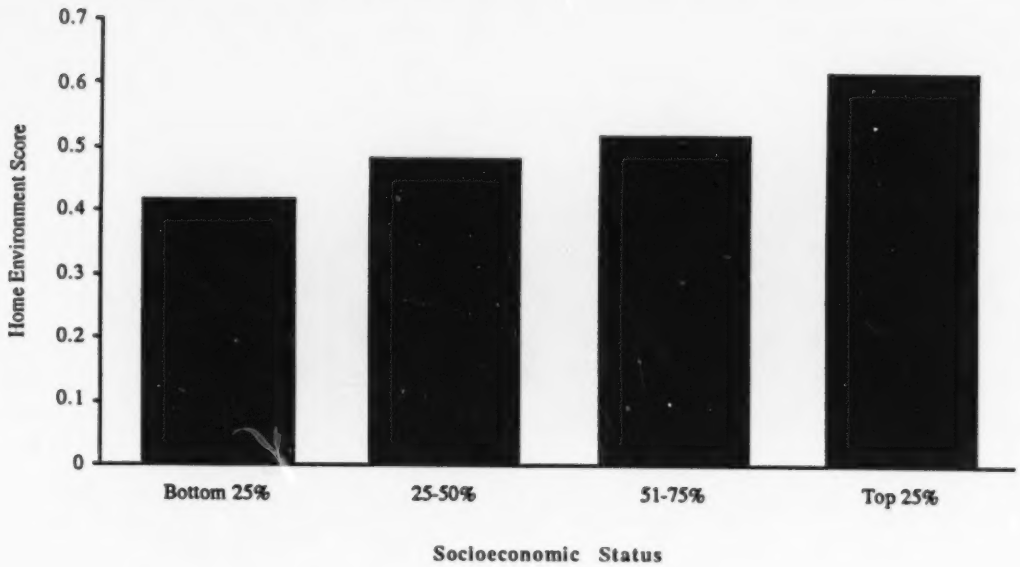
[14] Each of the three components was scaled from zero to one, with one representing the highest score possible and lower scores assigned their correct proportion of the maximum possible. The final home environment score was the mean of the three component scores unless some data were missing. The mean score for this sample was .51 and the standard error was .004. These three indicators of home environment were determined to be closely related in a principal components factor analysis that was calculated with all of the variables shown in Tables 1 and 2, as well as with mother's occupational status.

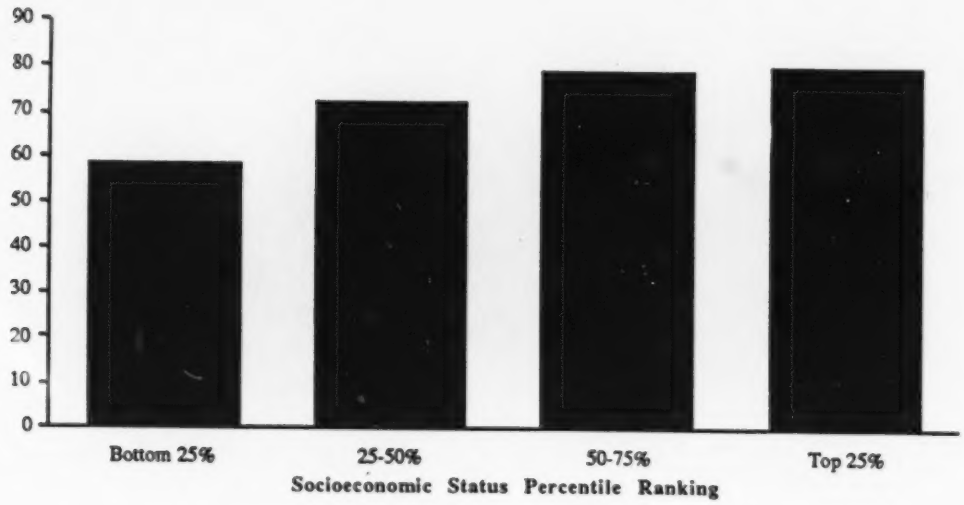
Figure 3
Mean Home Environment Scores for 1980 High School Seniors of Differing Socioeconomic Status



Differences in household composition were also associated with socioeconomic status. In general, the higher the student's quartile on the SES measure, the more likely they were to be living with their original parents. Eighty-one percent of the high SES students lived with their original parents during high school, compared to 59 percent of low SES students.[15] The proportion of students from each SES quartile living with their original parents is illustrated in Figure 4. Since socioeconomic status was associated with educational attainment as well as with family type for the 1980 high school seniors, the relationship already demonstrated between home environment and educational attainment may actually be due to SES effects on both of these.

[15] Differences between adjacent quartiles are statistically significant, except for the difference between the third and the highest quartiles.

Figure 4
Percentage of 1980 High School Seniors
Living with Their Original Parents in Each SES Quartile



Since socioeconomic status was itself associated with family structure and home environment, further analysis is needed to determine the extent to which the association between these characteristics and student attainment is independent of their association with socioeconomic status. It is also possible that the association between socioeconomic status and attainment demonstrated earlier is dependent upon their mutual association with these other student background characteristics.

In order to explore the relative impact of socioeconomic background and aspects of the home environment on educational attainment, a four-category variable for educational attainment was regressed on the five components of the SES index as well as on variables representing the five environmental factors shown in Table 2. In a multivariate analysis, there was no apparent impact of having a special place to study during high school on students' later educational attainment. Similarly, there was no discernible relationship between mother's employment pattern and student attainment. The relationship between childhood reading experiences and postsecondary attainment also disappeared when the socioeconomic background variables and other home environment indicators were controlled for. Finally, the

independent effect of family income was not discernible when other factors were taken into account.[16]

When variables contributing little explanatory power were removed from the model, the final regression equation consisted of seven independent variables: mother's education, father's education, the possessions index, father's occupational status, parental involvement during high school, and two variables for household composition.[17] The household composition variables were a dichotomous variable for living with one's original parents and a dichotomous variable for living with neither parent, giving coefficients contrasting the educational attainment of students from such households with those living with one parent. Both the possessions index and the parental involvement index ranged from zero to one, while the father's occupation could take on values from one to three for low, medium, and high status. The values of the variables for both parents' education and also the dependent variable were (1) no high school diploma, (2) high school diploma only, (3) some postsecondary education but no four-year degree, and (4) a four-year postsecondary degree or higher.[18] Table 4 below shows the unstandardized regression coefficients (and corrected standard errors) for the final seven variable model.

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[16] It is likely, of course, that income is an antecedent variable to other factors. Nevertheless, the index of possessions in the home had higher independent impact on student attainment and was retained in the final equation rather than family income. It can be thought of as an "affluence index."

[17] Variables for race and sex were not included in these models because race and sex effects are minimal once other social background characteristics are controlled for. (Half of the blacks in the senior sample had low socioeconomic status.) It is possible that the relationship among variables is different for students of different racial/ethnic background, and that could be a direction for future research.

[18] Since the basic sample consisted of seniors in high school, very few students failed to obtain a high school diploma. Thus the results of this model are really confined to attainment in postsecondary education and should not be generalized to educational attainment over a longer time period.

Table 4
Relationship between Educational Attainment and Student Background Indicators for 1980 High School Seniors

Variable	Parameter Estimate	Standardized Estimate	Standard Error	T Statistic
Intercept	1.61		0.004	
Mother's Education	0.11	.16	0.001	121.94
Father's Education	0.11	.18	0.001	135.41
Possessions Index	0.34	.08	0.005	72.06
Father's Occupational Status	0.06	.07	0.001	55.88
Parental Involvement in HS	0.41	.13	0.003	125.57
Original Parents in Household	0.04	.02	0.002	18.25
No Parents in Household	-0.16	-.04	0.005	-31.47

Since the adjusted R^2 for this model was .18, it is clear that there are many factors affecting postsecondary attainment beyond the variables represented by these background indicators of socioeconomic status and home environment. However, it is interesting to note that parental involvement during high school had a significant impact independent of social background. The importance of parental involvement is made clear by its significant contribution to attainment even when parental educational level has been taken into account. It appears that parents of any social class can contribute to their children's postsecondary educational attainment by monitoring educational progress during high school. By the same token, parental affluence and education were consistently related to educational outcomes, independent of parents' involvement with their high school children's education. There is an independent effect from background characteristics that is relatively immutable, even when parents try to stay involved in their children's progress. Finally, it is notable that, for all of the talk about broken homes and family structure, the only significant effect independent of other factors was seen for students living without either parent in the household. The apparent advantage of the nuclear over the single-parent family was not observed, and the advantage of the original parents over the single-parent or parent-and-guardian family was shown to be quite small.

In order to explore the possibility that home environment factors have different impacts on educational attainment for students of differing socioeconomic status, variables representing the five aspects of home environment shown in Table 2 were regressed on educational

attainment separately for students in the bottom SES quartile, the top SES quartile, and the interquartile range. In these models, the impacts of most of the home environment variables were very low, and the models had very little explanatory power.[19] In each group the only factor of independent importance was parental involvement during high school, and the impact was greater for students with higher levels of socioeconomic status.[20] These results indicate that perhaps interaction effects between background and home environment factors should be studied, as well as separate effects. However, the results of this subgroup analysis also indicate that socioeconomic status accounts for more of the variance in student educational outcomes than does the home environment.

Conclusion

The findings of this research demonstrate the pervasive importance of parental education and family's affluence. These factors were key to students' postsecondary attainment, even when aspects of the home environment were taken into account. Home environment factors were less important overall, and many were found to have no independent influence on educational attainment. Only parental involvement during high school was of significant impact when social background factors were controlled, although students living without either parent had significantly lower attainment compared to others with similar background. These preliminary results do indicate there may be interaction effects between parental involvement and social background as well.

[19] The R-squared was only .02 for low SES, .04 for medium SES, and .05 for high SES students.
[20] The unstandardized coefficient for parental involvement was .28 for the low SES group, .48 for the medium SES group, and .54 for the high SES group of students.

TECHNICAL APPENDIX

The High School and Beyond Study has produced a longitudinal data base with a nationally representative sample of over 58,000 1980 high school sophomores and seniors. As part of the long-term National Center for Education Statistics data collection program, the National Education Longitudinal Studies, HS&B provides the most contemporary information available on these students. Both the 1980 senior and sophomore samples were surveyed in 1980, 1982, 1984, and 1986. The 11,227 HS&B seniors used as the basis for this report are those who participated in the third follow-up survey in 1986.

The survey sample for HS&B was designed to include sufficient students of particular interest in policy questions by over-sampling of schools with high minority populations, alternative public schools, and private schools with high-achieving students. Follow-up surveys retained students in these groups at higher rates than other students. For more information on these data, see *High School and Beyond 1980 Senior Cohort Third Follow-Up (1986) Data File User's Manual* (Sebring, P., et al, Chicago: National Opinion Research Center, 1987).

Multivariate regression analysis was conducted using an ordinary least squares regression procedure, but the standard errors were corrected to account for the stratification and clustering in the sample. The standard errors reported for the regression coefficients were calculated by multiplying the standard error obtained through ordinary least squares by the average design effect for educational analysis obtained for that cohort by taking the ratio of the standard error obtained through ordinary least squares and that obtained through balanced repeated replications. The average design effect for the 1980 cohort was 1.38.